

## **REMARKS**

The application included claims 1-4, 6-13, and 18-30 prior to entering this amendment.

The Applicant amends claims 1, 6, 18, and 30. No new matter is added.

The application remains with claims 1-4, 6-13, and 18-30 after entering this amendment.

### **Claim Rejections - 35 U.S.C. § 112**

The Examiner rejected claim 30 under 35 U.S.C. § 112.

The rejection is traversed at least for those reasons provided at pages 6 and 7 in the Response dated July 12, 2010; however, without conceding the propriety of the rejection, Applicant amends claim 30 only to expedite prosecution, and without prejudice to pursuing the claim as previously presented or in other forms. Specifically, claim 30 is amended to recite, in part, *wherein the number of bits of the color element decreased from the full image level is dependent on a level of the image noise*. Accordingly, Applicant respectfully requests withdrawal of the rejection of claim 30.

### **Claim Rejections - 35 U.S.C. § 103**

The Examiner rejected claims 1-4, 6-13, and 18-30 under 35 U.S.C. § 103(a) over Hajjahmad *et al.* (U.S. Patent 5,748,770) in view of Okada *et al.* (U.S. Patent 7,233,414), and further in view of Maurer *et al.* (U.S. Patent 6,650,773).

The rejection is traversed; however, Applicant amends claims 1, 6, 18, and 30 only to expedite prosecution, and without prejudice to pursuing the claims as previously presented or in other forms. Amended claim 1 recites a method, comprising:

scanning an image with a scanner to obtain a full color level of a color element of a pixel of the scanned image;

decreasing the full color level of the color element by reducing a number of bits of the full color level of the color element to form a reduced color level image, wherein the number of bits reduced from the full color level is dependent on an image noise level associated with scanning the image;

composing a pattern comprising the number of bits reduced from the full color level of the color element, wherein the pattern has less color level of the color element than the full color level; and

restoring the full color level of the color element of the pixel by combining the reduced color level image with the pattern.

### **No prima facie case of Obviousness**

The Examiner failed to meet the legal burden of establishing a prima facie case of obviousness under MPEP 2142 at least for the reason that (1) the Examiner has not provided a proper suggestion or motivation to combine the references, (2) there is no reasonable expectation of success, and (3) the combination of references does not teach or suggest all the claim elements.

#### **1. No motivation to combine**

By way of providing motivation to combine Okada with Hajjahmad, the Examiner stated that it would have been obvious to modify Hajjahmad to include “decreasing the color level of the color element by reducing a number of bits of a full color level of the color element to form a reduced color level image, wherein the number of bits reduced from the full color level corresponds to an image noise level associated with scanning the image” (third paragraph, page 6 of the Office Action). The stated motivation for combining the references appears to be a near verbatim recitation of Applicant’s own claim 1. Applicant respectfully submits that it is improper to find a motivation to combine references from Applicant’s own specification, let alone from Applicant’s claims.

#### **2. No reasonable expectation of success**

Even assuming, for argument’s sake, that the combination of Okada with Hajjahmad is appropriate, Applicant respectfully submits that a method of data compression, as taught by Okada, is sufficiently dissimilar to Hajjahmad’s transformation process to render the proposed combination overly vague and indeterminate.

Hajjahmad is directed to image color recovery of a transformation process from a spatial domain to a frequency domain (col. 2, lines 18-37). The color levels associated with the initial image of Hajjahmad are operated on to provide the color resolution of the final image (col. 2, lines 49-59 and col. 10, lines 35-39). According to Hajjahmad, the full color resolution of the image is only obtained after the interpolation and combination of the multiple color channels has been completed (col. 10, lines 16-21). This “full color resolution” of Hajjahmad is not known beforehand, rather the results are obtained only after operating on the electronic image data to account for the inherent limitations of the red, green and blue color channels (col. 9, lines 23-45).

In other words, the reconstructed colors of Hajjahmad do not match the actual color values of the original image, but are interpolated from the color values of neighboring pixels.

Okada is directed to a method of image compression, wherein a first compressed image data set is compared to a second compressed image data set to identify differences in the gradation conversion processes (col. 2, lines 31-45). By identifying the differences in gradation conversion processes, the amount of data that needs to be recorded may be reduced (col. 2, line 65 to col. 3, line 3). The differences in gradation conversion processes includes luminance differences, wherein Okada teaches that where a region includes a luminance difference that is not discernible by a human observer, the luminance difference may be ignored (col. 9, lines 27-31).

Whereas Hajjahmad is attempting to reconstruct a color array of the scanned image by interpolating colors between pixels, Okada is attempting to reduce the amount of data needed to be stored when compressing image data. Applicant respectfully submits that the teaching of Okada related to comparing gradation conversion characteristics of a data compression process fails to provide any insight or guidance as to improving the transformation process from a spatial domain to a frequency domain, as disclosed in Hajjahmad.

### **3. The claim elements are not taught by the proposed combination**

The Examiner has failed to allege which, if any, reference discloses *composing a pattern comprising the number of bits reduced from the full color level of the color element*, as recited by claim 1. The Examiner's rejection of claim 1 is silent as to this element. The Examiner has alleged that Hajjahmad discloses "composing a pattern... comprising the color element" (page 4 of the Office Action). The Examiner has also alleged that Okada discloses "decreasing the full color level of the color element by reducing a number of bits of the full color level to form a reduced color level image" (page 5 of the Office Action). Even assuming, for argument's sake, that the Examiner is correct in these allegations, the Examiner has not provided any evidence for how the combination discloses *composing a pattern comprising the number of bits reduced from the full color level of the color element*. Applicant respectfully submits that the rejection of claim 1 is therefore improper, at least on the basis that the Examiner has failed to identify with particularity how, or if, the combination of references discloses all the recited elements.

In rejecting claim 1, the Examiner alleged that Hajjahmad discloses a pattern having “less color level of the color element than the full color level” (page 4 of the Office Action). By way of support, the Examiner cited steps 404 to 414, figure 4, column 10, lines 22-39 of Hajjahmad.

The color levels associated with the initial scanned image in Hajjahmad are operated on to provide the color resolution of the final image (col. 2, lines 49-59 and col. 10, lines 35-39). According to Hajjahmad, the full color resolution of the image is only obtained after the interpolation and combination of the multiple color channels has been completed (col. 10, lines 16-21). This “full color resolution” of Hajjahmad is not known beforehand, rather the results are obtained only after operating on the electronic image data of the scanned image to account for the inherent limitations of the red, green and blue color channels (col. 9, lines 23-45). In other words, the reconstructed colors of Hajjahmad do not match the actual color values of the original scanned image, but are interpolated from the color values of neighboring pixels.

According to Hajjahmad, the color recovery being sought by processing the horizontal and vertical channels is the result of the separate pixel elements of a charge coupled device (CCD) that are only responsive to one third of the color spectrum (col. 9, lines 23-42). The CCD is described as including a red, green and blue pixel, such that a red pixel is unresponsive to the green and blue color spectrums, the green pixel is unresponsive to the red and blue color spectrums, and the blue pixel is unresponsive to the red and green color spectrums. By processing or interpolating the color values in vertical and horizontal directions, pixels which would otherwise only be represented by a single color (e.g. red) may be interpolated with neighboring pixels to include representations of the other two colors (e.g. green and blue).

For a red pixel of the CCD, no red pixel data is removed or added in the processing described by FIG. 4, rather pixel data from the surrounding green and blue pixels are added so that a single pixel includes color data for red, green and blue. Accordingly, the processing of the color channels, as described by Figure 4 of Hajjahmad and as relied upon by the Examiner, does not describe *a pattern comprising the number of bits reduced from the full color level of the color element*, but rather the processing provides for filling in completely missing color data of two of the three colors at any one pixel location.

Hajjahmad describes that the original electronic image data is itself operated on by a transformation process to obtain a new image comprising interpolated pixel values, which are estimated based on the mathematical operations of PCT and IPCT coefficients (col. 10, lines 64-

67). In other words, the “full color resolution” obtained by Hajjahmad’s transformation operation does not restore the initial electronic image data of the scanned image, but are a modification of the electronic image data based on the interpolation of neighboring pixels as previously described.

According to Hajjahmad, the red, green, and blue pixels of the CCD scanner are limited to scanning certain frequencies of light, and hence an interpolation is made to each color channel to provide missing color components and then the color channel results are combined so that each pixel contains combined color data from each channel (col. 9, lines 23-45). The vertical and horizontal channels are separately processed and combined since a pixel will have neighbors in both the horizontal and vertical direction that are interpolated for the missing color data. For a given red pixel, for example, combining the vertical and horizontal channels does not result in an increased color level of red, rather the combined results provides a more accurate interpolation of the missing green and blue colors that are then added to the red pixel in question. These estimated colors are not even applied to the original pixel locations, but are assigned to the neighboring pseudo-pixel locations (col. 15, lines 55-61), such that Hajjahmad’s transformed color results are provided for a different pixel location than where the color was actually scanned from. Accordingly, the processing of the color channels of Hajjahmad also fails to disclose *restoring the full color level of the color element of the pixel by combining the reduced color level image with the pattern.*

The Examiner acknowledged that Hajjahmad fails to disclose “decreasing the full color level of the color element by reducing a number of bits of the full color level of the color element to form a reduced color level image” (first paragraph, page 5 of the Office Action) and instead alleges that Okada discloses these elements. The Examiner further alleged that Okada discloses “wherein the number of bits reduced from the full color level corresponds to an image noise level associated with scanning the image” (second paragraph, page 5 of the Office Action). By way of support, the Examiner cites steps S3 to S5 and FIG. 2 of Okada. Applicant respectfully disagrees with the Examiner’s interpretation of Okada.

The Examiner stated that he considers the luminance difference of Okada to be the same as noise level, recited by claim 1 (second paragraph, page 5 of the Office Action). The Examiner appears to be conveniently parsing the claim element to exclude that the recited image noise level is associated with scanning the image. In fact, Okada has nothing to do with scanning an

image. Rather, as discussed above, Okada is directed to a method of image compression. The luminance differences discussed in Okada are related to differences in gradation conversion processes of a compression algorithm. Applicant respectfully submits that the luminance difference of Okada fails to disclose *an image noise level associated with scanning the image*, as recited by claim 1.

Although of different scope than claim 1, independent claims 6, 8, and 18 recite certain elements similar to those discussed above in claim 1, such that the comments directed to claim 1 also apply to claims 6, 8, and 18. As claims 2-4, 6, 7, 9-13, and 19-30 depend directly or indirectly from independent claims 1, 6, 8, and 18, the comments and revisions directed above to claims 1, 6, 8, or 18 apply equally to claims 2-4, 6, 7, 9-13, and 19-30, respectively. In addition, claims 2-4, 6, 7, 9-13, and 19-30 recite further subject matter. Accordingly, reconsideration and withdrawal of the rejection of claims 1-4, 6-13, and 18-30 is respectfully requested.

Any statements made by the Examiner that are not addressed by the Applicant do not necessarily constitute agreement by the Applicant. In some cases, the Applicant may have amended or argued the independent claims thereby obviating grounds for rejection of the dependent claims.

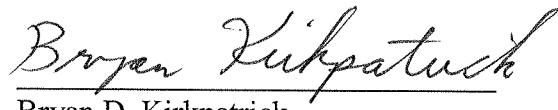
## **CONCLUSION**

For the foregoing reasons, the Applicant respectfully requests reconsideration and allowance of the present application. The Examiner is encouraged to telephone the undersigned at (503) 546-1812 if it appears that an interview would be helpful in advancing the case.

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Respectfully submitted,

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